

1 Restatement to the Claims:

2 This is listing of claims as currently pending.

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5 1. (Currently Amended) A system for channelizing an IF wideband  
6 input signal into separated channelized digital output signals, the  
7 system comprising,

8 a complex mixer for quadrature demodulation of the IF wideband  
9 input signal into a complex signal,

10 a polyphase clock generator for generating polyphase clock  
11 signals each having the same clocking signal that is staggered in  
12 phase over a clock cycle,

13 a parallel converter comprising a bank of samplers for  
14 respective sampling the complex signal into staggered sampled  
15 complex signals and comprising a bank of converters for converting  
16 the staggered sampled complex signals into respective sampled  
17 digital complex signals, each of the samplers of the bank of  
18 sampler sampling the complex signals at a rate of the clock cycle  
19 at a respective staggered phase, and

20 a parallel filter bank comprising a polyphase filter bank of  
21 filters for respective filtering the sampled digital complex  
22 signals into respective filtered complex signals and comprising a  
23 processor for transforming the filtered complex signals into the  
24 channelized digital output signals, the channelized digital output  
25 signals being separated from each other and corresponding to a  
26 respective plurality of frequency band signals of the IF wideband  
27 signal.

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1 2. (Previously Presented) A system for channelizing an IF wideband  
2 input signal into separated channelized digital output signals, the  
3 system comprising,

4 a complex mixer for quadrature demodulation of the IF wideband  
5 input signal into a complex signal,

6 a polyphase clock generator for generating polyphase clock  
7 signals each having the same clocking signal that is staggered in  
8 phase over a clock cycle,

9 a parallel converter comprising a bank of samplers for  
10 respective sampling the complex signal into staggered sampled  
11 complex signals and comprising a bank of converters for converting  
12 the staggered sampled complex signals into respective sampled  
13 digital complex signals, each of the samplers of the bank of  
14 sampler sampling the complex signals at a rate of the clock cycle  
15 at a respective staggered phase, and

16 a parallel filter bank comprising a polyphase filter bank of  
17 filters for respective filtering the sampled digital complex  
18 signals into respective filtered complex signals and comprising a  
19 processor for transforming the filtered complex signals into the  
20 channelized digital output signals, wherein,

21 the processor is a Fast Fourier Transform processor for computing  
22 N point Fast Fourier transforms of the N filter complex signals  
23 once every clock cycle of  $(f_g/N)^{-1}$  seconds.

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1 3. (Previously Presented) The system of claim 2 wherein,  
2 the polyphase filter bank comprises a plurality of digital  
3 filters each of which is a finite impulse response filter.  
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5 4. (Previously Presented) The system of claim 2 wherein,  
6 the polyphase filter bank comprises a plurality of digital  
7 filters each of which is an infinite impulse response filter.  
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9 5. (Previously Presented) The system of claim 2 wherein,  
10 the input signal comprises a plurality of channel signals that  
11 are frequency division multiple access signals having a channel  
12 bandwidth, and

13 the polyphase filter bank comprises a plurality of digital  
14 filters each of which having a bandwidth equal to  $1/2$  of a  
15 bandwidth of a respective channel signal in the input signal.  
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1 6. (Previously Presented) The system of claim 2 wherein,  
2 the input signal is an IF wideband signal communicating channel  
3 signals communicated within a channel bandwidth,  
4 the complex signal comprises I and Q quadrature baseband  
5 signals,  
6 the staggered sampled complex signals are staggered sampled I  
7 and Q quadrature baseband signals,  
8 the sampled digital complex signals are digitized staggered  
9 sampled I and Q quadrature baseband signals,  
10 the filtered complex signals are baseband channel signals  
11 within 1/2 of the channel bandwidth, and  
12 the channelized digital output signals are separated baseband  
13 channel signals.

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1 7. (Original) A system for channelizing an IF wideband signal into  
2 channelized digital output signals, the system comprising,  
3 a complex mixer for quadrature demodulation of the IF wideband  
4 signal into a complex signal communicating channel signals  
5 communicated within a channel bandwidth, the complex signal  
6 comprises I and Q quadrature baseband signals,  
7 a polyphase clock generator for generating polyphase clock  
8 signals each of which having the same clocking signal that is  
9 staggered in phase over a clock cycle,  
10 a bank of samplers for respective sampling the I and Q baseband  
11 quadrature signals into staggered sampled I and Q quadrature  
12 signals, each of the samplers of the bank of sampler sampling the I  
13 and Q quadrature signals at a rate of the clock cycle at a  
14 respective staggered phase,  
15 a bank of converters for converting the staggered sampled I and  
16 Q quadrature signals into respective sampled digital I and Q  
17 quadrature signals,  
18 a polyphase filter bank of filters for respective filtering  
19 the sampled digital I and Q quadrature signals into respective  
20 filtered I and Q quadrature signals, and  
21 a processor for transforming the filtered I and Q quadrature  
22 signals into the channelized digital output signals, the  
23 channelized digital output signals being separated from each other  
24 and corresponding to a respective plurality of frequency band  
25 signals of the IF wideband signal.

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1 8. (Original) The system of claim 7 wherein,

2 the processor is a Fast Fourier Transform processor for  
3 computing N point Fast Fourier transforms of the N filter complex  
4 signals once every clock cycle of  $(f_s/N)^{-1}$  seconds, and

5 the polyphase filter bank comprises a plurality of digital  
6 filters each of which is a finite impulse response filter.

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8 9. (Original) The system of claim 7 wherein,

9 the IF wideband signal comprises a plurality of channel  
10 signals that are in frequency division multiple access signals  
11 having a channel bandwidth, and

12 the polyphase filter bank comprises a plurality of digital  
13 filters each of which having a bandwidth equal to 1/2 of a  
14 bandwidth of a respective channel signal in the input signal.

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